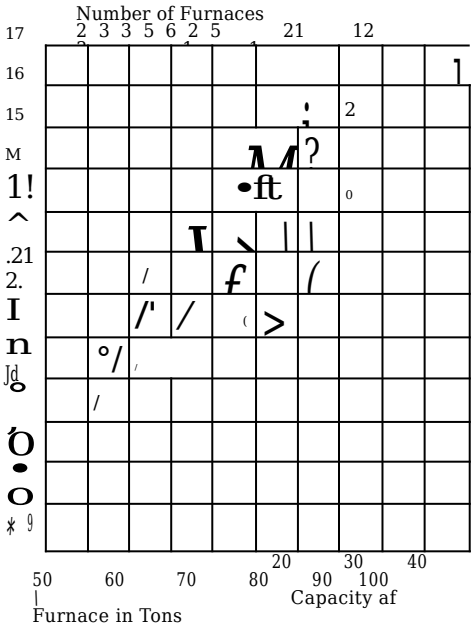
While it is necessaiy to provide additional depth to cover the depth of cinder and the boiling of the charge, additional area is not required for these purposes.

An old rule of thumb made the length of the furnace twice its width. This was all very well with small furnaces, although a longer hearth gives better combustion conditions. The tempera-ture of the metal in the bath is between 1525° and 1600° C. The cinder will be slightly hotter than the metal, the difference ranging from a few degrees just previous to tapping, to 100° or more.



Fii. 140.—Graphical Comparison of the Width of Hearth in Various Open-hearth Furnaces.

The gases leaving the hearth will range between 1600° and 1700°.

Told states that the gases should remain in the hearth 2 seconds;

Groume-Grjimailo, that the temperature drop through the hearth should be assumed as 200° C. per second. The theoretical flame temperature of a very good producer gas with both the air and the gas preheated to 1000° and 40 per cent excess air will be between 2100° and 2140°.

These data would seem consistent. It requires between one and two seconds for the reaction of combustion to be completed as the